

Utah State Board of Education Position Statement on Teaching Evolution

The Theory of Evolution is a major unifying concept in science and appropriately included in Utah's K-12 Science Core Curriculum.

This position is consistent with that taken by the National Academy of Sciences, the American Association for the Advancement of Science (AAAS), and most other scientific and educational organizations. The Utah State Board of Education and these organizations affirm science as an essential way of understanding for all students and the importance of evolution as a unifying concept in science.

Science: A Way of Knowing

Science is a distinctive way of understanding the natural world. Science seeks to increase our understanding through empirical evidence. As a way of knowing, science assumes that anything that can be observed or measured is amenable to scientific investigation. By the very nature of scientific inquiry, there are infinite possibilities for further refinement of current knowledge and understanding.

Understanding may be derived from sources and perspectives other than science such as historical and logical analyses, art, religion and philosophy. These sources rely upon other ways of knowing, such as emotion and faith. While these ways of understanding and creating meaning are important to individuals and society, they are not amenable to scientific investigation and thus not appropriate for inclusion in the science curriculum. Science relies nearly exclusively on observation and empirical evidence. Since progress in the modern world is tied so closely to this way of knowing, scientific literacy is essential for a society to be competitively engaged in a global economy.

Evolution: A Unifying Concept

Evolution in the broadest sense can be defined as the idea that the universe has a history and has changed over time. Observation of the galaxies, stars, planet Earth, and life on Earth clearly demonstrates that significant changes have occurred. There is abundant and consistent evidence from astronomy, physics, biochemistry, geochronology, geology, biology, anthropology, and other sciences that evolution has taken place. This evidence is found in widely divergent areas, from the geologic fossil record to DNA analysis.

Evolution is an ongoing process with crucial implications for disciplines such as medicine, agriculture, and conservation biology. The Theory of Evolution provides a unifying basis upon which the elements of life are understood and upon which predictions can be made. Moreover, viewing present-day organisms as products of evolution provides the most productive framework for investigating and understanding their structure and function. As such, evolution is a unifying concept for science and provides the foundation for understanding nature. The *National Science Education Standards* from the National Academies of Science and *Benchmarks for Science Literacy* from the American Association for the Advancement of Science identify evolution as a unifying concept across the major disciplines of science. Scientific disciplines with strong historical components -- such as astronomy, geology, biology, and anthropology --

rely upon the concepts of evolution to understand the nature of changes that have occurred or can be predicted.

There is little or no debate among credible scientists about *whether* evolution has taken place. However, since our understanding is still incomplete, there is considerable and productive debate about processes of evolution. Research questions remain, and scientists often disagree about their explanations, as they should. The nature of science encourages ongoing and meaningful investigation of all assertions made by science. Scientific conclusions are tested by experiment and observation as all scientific theories are subject to continued evaluation.

While some describe the principle of evolution as “just a theory,” the scientific definition of a theory is far more rigorous than may be commonly understood. In science, a theory is a systematic explanation of observed phenomena. It must be consistent with all natural laws and withstand the scrutiny and inquiry of the scientific community. The National Academy of Sciences has stated, "Evolution is one of the strongest and most useful scientific theories we have." As a fundamental scientific concept, evolution is a necessary part of science classroom instruction, and it will continue to be taught and progressively refined as a key scientific principle.

Student Beliefs and Teaching Evolution

Teachers should be aware that students bring with them a set of beliefs. Teachers and students should respect and be nonjudgmental about students' beliefs, and teachers should help students understand that science is an essential way of knowing. Teachers should encourage students to discuss any seeming conflicts with their parents or religious leaders. Science teachers should make available to interested parents their planned instruction and the context for that instruction.